



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

D350-748-103
Job Sheet 173649



4642

Part No: D350-748-103

Job Qty: 1 ea

Part Name: AS350 / AS355 Stainless Steel Fwd Crosstube



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 3/6/18

Job Tracking No:

Due Date: 4/25/18

Created By: Michelle Gagnon-Donovan

Type: Stock

Description:

Ship Via:

Bill of Materials

TEN5081441



Container No: S085031



Part: D350-748-103

Job No: 173649

Serial No/Batch: S085031

Revision:

Inspector:

Exp Date:

Instructions:

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL.: 1 813 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

Date: 06/27/18

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea		4/24/18	0.00	0.00	Start Up Crosstubes-1		GP 18-06-28
110	CNC Bend Skidtube	1 pcs		4/24/18	6.53	3.45	CNC Bend Skidtube		GA 18-06-28
120	Crosstubes	1 pcs		4/24/18	0.00	2.49	Crosstubes-2		DVL 18-06-04
127	QC	1 pcs		4/24/18	0.00	0.00	QC15		GP 18-07-12
128	Crosstubes	1 pcs		4/24/18	0.00	2.49	Crosstubes-2		GP 18-07-12
130	Crosstubes	1 pcs		4/24/18	0.00	2.49	Crosstubes-2		GP 18-07-12
140	QC	1 pcs		4/24/18	0.00	0.00	QC5		38
174	Outsource	1 pcs		4/24/18			SKY002-VC	P/O: 040521	CZ 18-07-19
176	Packaging	1 pcs		4/24/18	0.00	0.00	Packaging2		JUL 19 2018
178	QC	1 pcs		4/24/18	0.00	0.00	QC5		AS JUL 19 2018
180	SprayPaint	1 pcs		4/24/18	0.00	0.99	Spray Paint		AS JUL 19 2018
190	QC	1 pcs		4/24/18	0.00	0.00	QC14		AS 18-07-25
200	Crosstubes	1 pcs		4/25/18	0.00	2.49	Crosstubes-2		AS JUL 20 2018
210	QC	1 pcs		4/25/18	0.00	0.00	QC5		AS 18-07-25
220	Packaging	1 pcs		4/25/18	0.00	0.00	Packaging1-3		JUL 25 2018
230	QC	1 pcs		4/25/18	0.00	0.00	QC4		AS 18-07-25
235	DC	1 pcs		4/25/18	0.00	0.00	DC		AS 18-07-25
240	Packaging	1 pcs		4/25/18	0.00	0.00	Packaging3-1		AS 18-07-25
250	QC21-FG	1 Ea		4/25/18	0.00	0.00	QC21		AS 18-07-25

Part Op 110 - Bend tube as per Dwg D350-748-143 using CNC bender program D350F and Folio FT

Descriptions: 120 - ****VERIFY CROSTUBE DIMENSIONS AS PER DWG****

127 - ***MARK CUT LINES***

128 - CUT TUBE AT HEIGHT ON FAI SHEET

130 - 2- Drill Tube as per Dwg D350-748-143 Using DT8876 A,B & C Drill Jigs, 4- Engrave Part # and Batch # as per Dwg D350-748-143 5- Remove all marks from tube within limits of D350-748-143

140 - CHECK 10 DEG HOLES WITH DT8876E (EUROCOPTER CLAMP)

174 - ISSUE P/O TO SKY SERVICE:

180 - ***VERIFY BY _____ BATCH # TO MATCH W/O _____ 1. Apply Axalta 13205S Cleaner inside and outside crosstube per QSI 005 4.1.4 ****LIMIT AIR PRESSURE TO 50 PSI WHEN INSTALLING AETC-1032 INSERT AND ONLY EXPAND INSERT ONCE*** Primer 5084461 Paint 138886

190 - Then, Wrap in plastic bag to protect from scratches

200 - INSTALL GROUND WIRE INSERT, THEN INSERT SCREW AND WASHER 2-Install supports with Proseal 890 per D350-748-143 and QSI 015 138848 exp 11/18

210 - ***RE-CHECK TORQUE ON CLAMP AFTER PROSEAL HAS CURED FOR 72HOURS AS PER DWG.***

230 - ***VERIFY BY _____ BATCH # TO MATCH W/O _____

235 - Photocopy bluefile & type labels per PPPD350-748-103 CHG001

240 - Identify and pack for shipping as per PPP D350-748-103

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
AETC-1032	Insert	1 Ea (1 ea)	90-Start up Operation	
D350-748-143TRN	Ss Crosstube Turning Detail	1 Ea (1 ea)	90-Start up Operation	
D3502-1	Support	2 Ea (2 ea)	90-Start up Operation	
D5123-7	Clamp Cushion	2 Ea (2 ea)	90-Start up Operation	
MS21920-20	Clamp	2 Ea (2 ea)	90-Start up Operation	
MS51958-83	Screw	1 pcs (1 ea)	90-Start up Operation	
NAS1149C0363R	Washer	1 Ea (1 ea)	90-Start up Operation	
AN4-41A	Bolt	8 Ea (8 ea)	220-Packaging	
AN4-6A	Bolt	16 Ea (16 ea)	220-Packaging	
AN5-32A	Bolt	4 Ea (4 ea)	220-Packaging	
D3500-1	Saddle	4 Ea (4 ea)	220-Packaging	
D3501-1	Bushing	16 Ea (16 ea)	220-Packaging	
MS21042L4	Nut	24 Ea (24 ea)	220-Packaging	
MS21042L5	Nut	4 Ea (4 ea)	220-Packaging	
NAS1149D0463J	Washer	32 Ea (32 ea)	220-Packaging	
NAS1149D0563J	Washer	8 Ea (8 ea)	220-Packaging	

Job Allocations				
Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	AETC-1032 FM137335	①	242	0
	D350-748-143TRN	1	2	0
	D3502-1 F183478	②	62	0
	D5123-7 F15323C	②	145	0
	MS21920-20 5024478	②	112	0
	MS51958-63 F7834962	①	73	0
	NAS1149C0363R 5017102	①	350	0
	AN4-41A	8	230	0
	AN4-6A	16	804	0
220-Packaging	AN5-32A	4	114	0
	D3500-1	4	101	0
	D3501-1	16	187	0
	MS21042L4	24	3,884	0
	MS21042L5	4	849	0
	NAS1149D0463J	32	5,081	0
	NAS1149D0563J	8	1,290	0
Part Specifications				
Specifications could not be found.				

Plex 3/6/18 10:28 AM Dart.Gagnon.Michelle

Item	Qty	Part Number	Description
	X	D350-748-143	CROSSTUBE ASSEMBLY (AS 350/355 HI FWD)
1	1	D6021-125	CROSSTUBE
2	2	D3502-1	SUPPORT
3	2	D5123-7	CLAMP CUSHION
4	1	AETC-1032	INSERT
5	2	MS21920-20 OR MS21920-21/-22	CLAMP (PER DART SPEC. M-MS21920-20/-21/-22)
6	1	NAS1149C0363R	WASHER (OR AN960C10)
7	1	NAS1635-3-8	SCREW (OR MS51958-63)
8	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6021-125 (17-4PH)
FINISHED LENGTH AFTER TURNING = 112.270±0.08 (AFTER BENDING/TRIMMING = 110.27 REF)
- 2) FINISH: PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCE: PER DART QSI 018 UNLESS OTHERWISE NOTED.
WALL THICKNESS ECCENTRICITY PER DART QSI 038 7.2
MIN. ALLOWABLE WALL IS -0.020 FROM NOMINAL
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: DART PART NUMBER "D350-748-143" AND BATCH NUMBER ON INSIDE OF CUFF
PER DART QSI 044 8.4 (VIBRATING STYLUS)
- 7) WEIGHT: 30.45 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.290 HOLE.
- 9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.

TURNING

- 10) BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.

BENDING

- 11) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES PER SIDE. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D. ON TOP HALF OF BEND, AND 8% ON BOTTOM HALF OF BEND.
- 12) MAX AMPLITUDE OF RIPPING ALONG BENT PORTION OF THE TUBE IS 0.030 (ZN A1-3)
- 13) MAX TWIST: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.38 (ZN C1-3).

ASSEMBLY

- 14) TO INSTALL D3502-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.02" TO 0.05" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 60 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

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WITHOUT NOTICE
WORK ORDER

NO. 173649 *mg*

MAR 06 2018

UNDER REVIEW

15/11/24
GRF 15.567 9/12/29

DEO ATTACHED

RELEASED

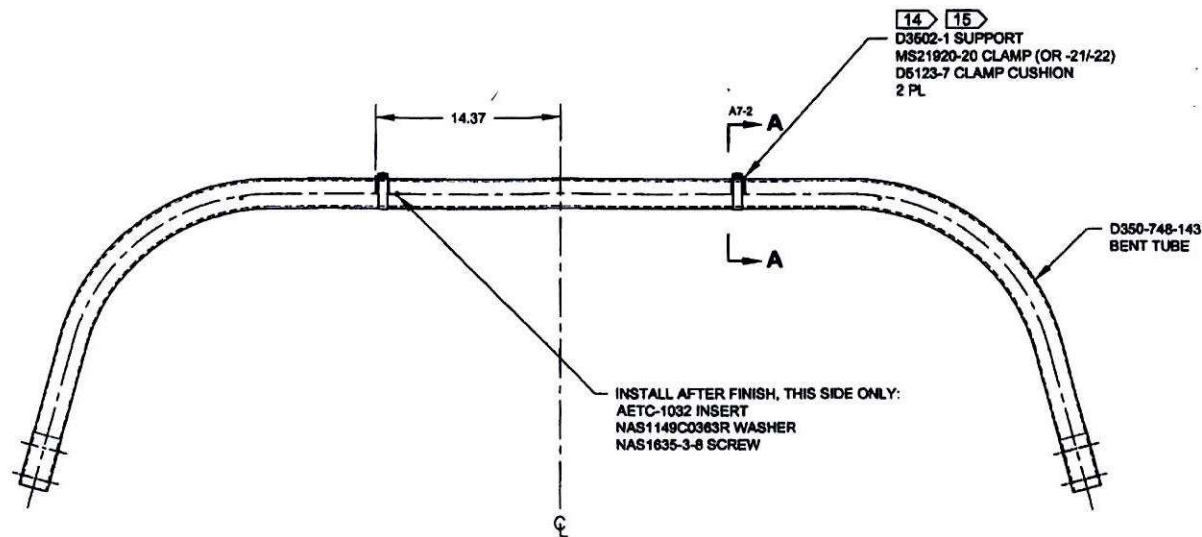
2015 MAR 18

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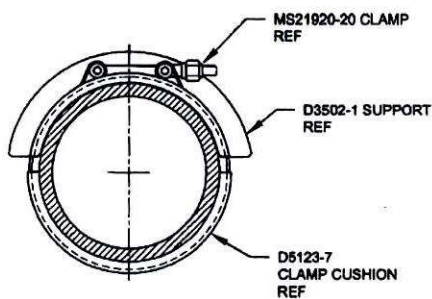
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REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	15.01.21		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D350-748-143	REV. A SHEET 1 OF 4
TITLE CROSSTUBE (AS 350/355 HI FWD)	SCALE NTS

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**D350-748-143
ASSEMBLY DETAIL**



SECTION A-A D4-2
SCALE 6X

DEO ATTACHED

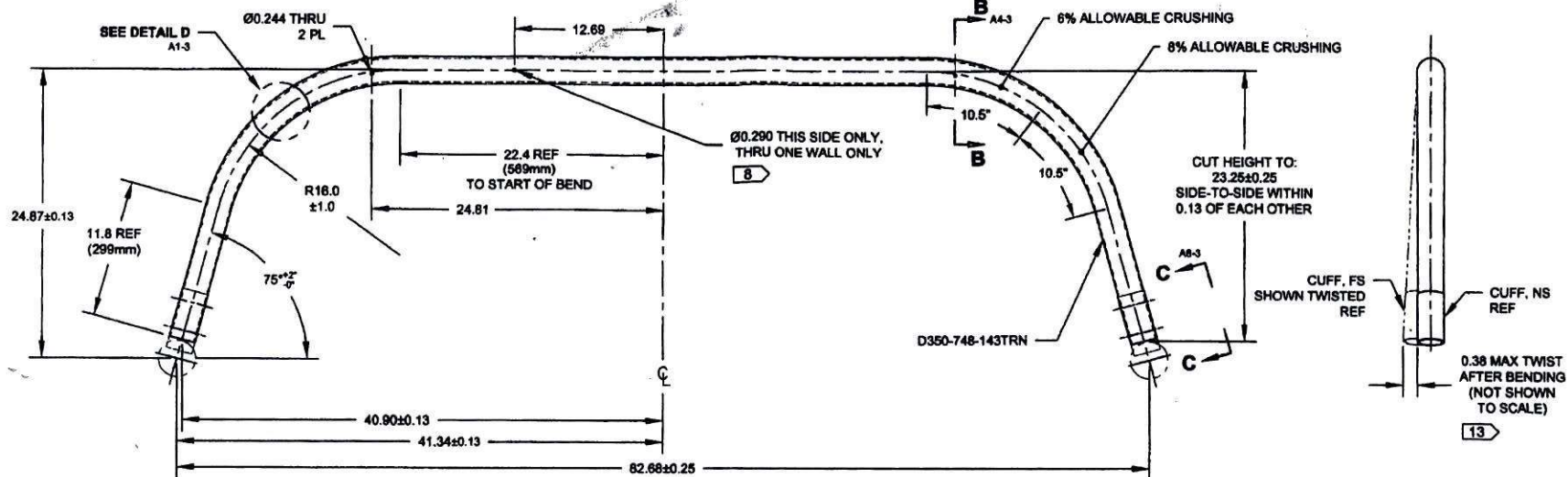
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2015 MAR 18
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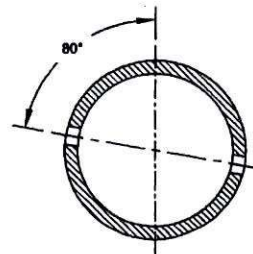
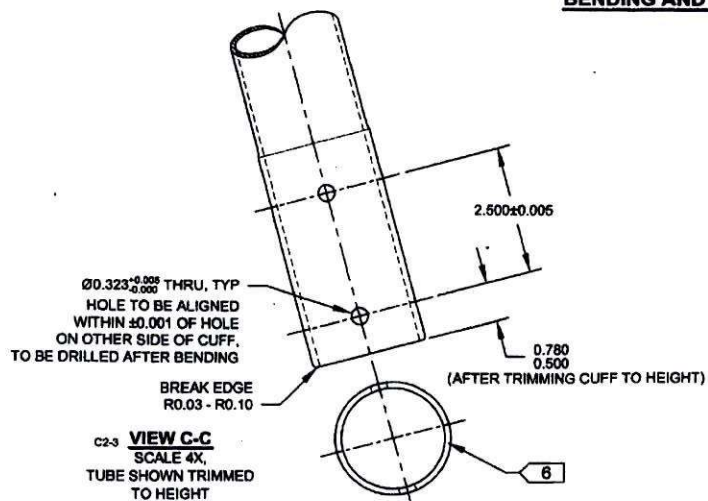
UNDER REVIEW

15/1/23
9/16/25

DESIGN	40	DART AEROSPACE LTD	
DRAWN	40	HAWKESBURY, ONTARIO, CANADA	
CHECKED	40	DRAWING NO.	REV. A
MFG. APPR.	40	D350-748-143	SHEET 2 OF 4
APPROVED	40	TITLE	SCALE
DE APPR.	40	CROSSTUBE (AS 350/355 HI FWD)	NTS
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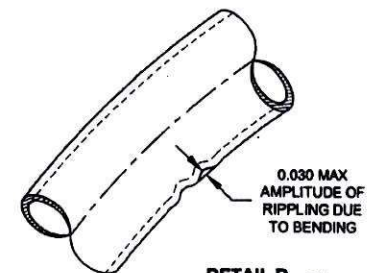
D350-748-143
BENDING AND DRILLING DETAIL 11



RELEASED
2015 MAR 18
DEO ATTACHED

UNDER REVIEW

15/04/28
9/2/25



DESIGN	9	DART AEROSPACE LTD	
DRAWN	9	HAWKESBURY, ONTARIO, CANADA	
CHECKED	A.P.	DRAWING NO.	REV. A
MFG. APPR.		D350-748-143	SHEET 3 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE (AS 350/355 HI FWD)	NTS
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DRAWING NO. D350-748-143	TITLE CROSSTUBE	REV. A	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D350-748-143-A-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>Q</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>[Signature]</i>	APPROVED <i>[Signature]</i>		DE APPR. <i>[Signature]</i>		
DATE 15.11.18	DATE 15.11.18	DATE 16.02.19	DATE FEB 19 2016		DATE 2016.02.19		

AMEND NOTE 2 (SHEET 1) AS FOLLOWS:

- 2) FINISH: PREPARE SURFACE PER DART QSI 005 4.1.4
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
 PAINT OUTSIDE PER DART QSI 005 4.2
 OR
 POWDER COAT WHITE (4.3.5.2) PER DART QSI 005 4.3

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 2016-02-26

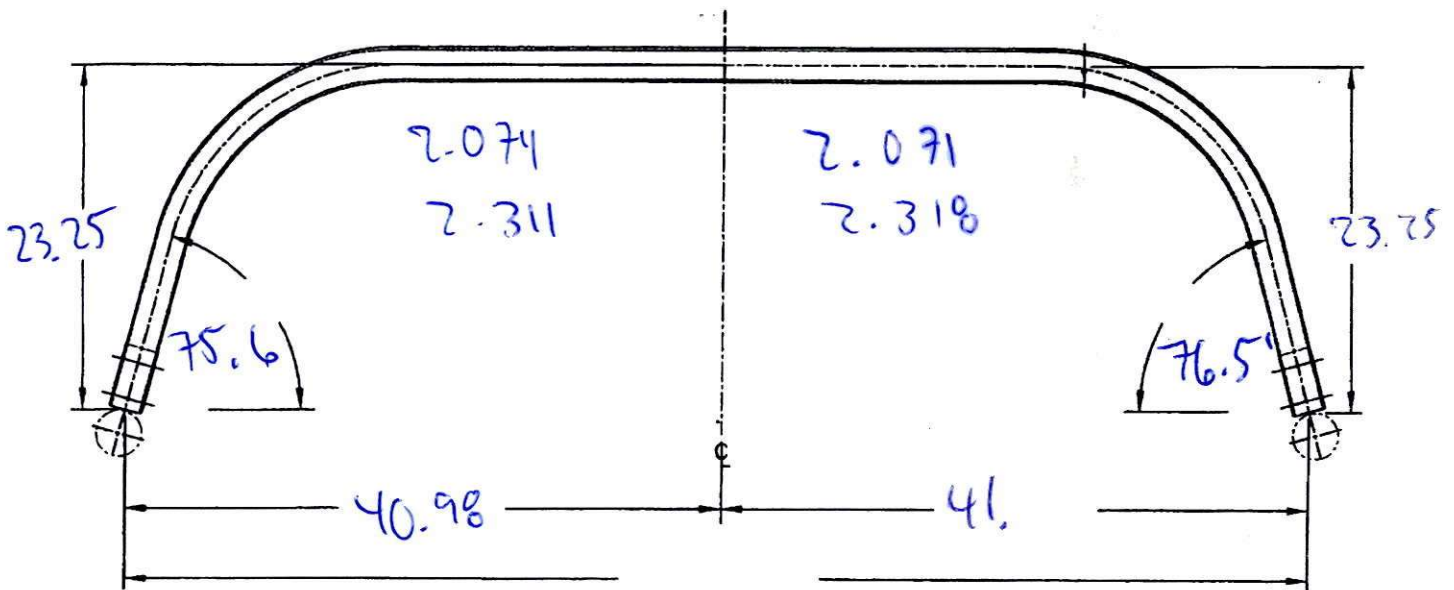
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DART AEROSPACE LTD		Work Order:	173649
Description: Crosstube High Fwd, SS (AS350/355)		Part Number:	D350-748-103
Inspection Dwg: D350-748-143 Rev: A		Page 1 of 1	

Required Dimension	Min	Max
Height	23.00	23.50
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.55	82.05
Bending Passes	7	--
Crushing	--	8%
Twist	--	0.38



	Side A	Side B
Bending Passes	26	39
Crushing	5.4%	3.6%
Comments		

QC15 Inspection	JB
Date	18-07-03

Rev	Date	Change	Revised by	Approved
A	15.09.09	New Issue	KJ	AA

Twist: 0.139



skyservice Work Order Traveler

Sky Service F.B.O. Inc.

10105 Ryan Avenue, Dorval, Quebec, H9P 1A2

TCCA AMO 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO36735	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: PO040521
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT (LIQUID PENETRANT CRACK TEST) ON THE FOLLOWING FOUR (7) CROSSTUBES:

P/N: D119-796-241 Aft CROSSTUBE

1- JOB SHEET# 178858

P/N: D350-748-103 STAINLESS STEEL FWD CROSSTUBE

2- JOB SHEET# 157386

3- JOB SHEET# 173649

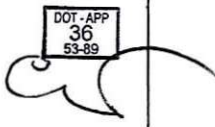
4- JOB SHEET# 173650

P/N: D350-748-203 STAINLESS STEEL AFT CROSSTUBE

5- JOB SHEET# 173652

6- JOB SHEET# 173653

7- JOB SHEET# 178950

Action Taken:	Date:	Initial/Stamp:				
LIQUID PENETRANT INSPECTION CARRIED OUT ON ITEMS LISTED ABOVE (ITEMS 1-7) AS PER ASTM1417M-16						
NO CRACK FOUND						
PEN (ZL-56, MPO13600), DEV. (SKD-S2, MPO11715), CLEANER (SKC-S, MPO19368)						
	JUL 18 2018					
Description	Location	P/N	Qty	Batch	S/N Off	S/N On

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature:	ACA/SCA Stamp	Date:
Name: CHRISTIAN BRIEN		JUL 18 2018



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

Container View (Active) - Master Unit Containers

Master Unit No	Container No	Part No	Part Name	From Container	Current Location	Quantity
004647	FM137544-1	AN4-41A	Bolt		ST342	2
004647	S096027	AN4-41A	Bolt	S073817	ST342	6
004647	S096026	AN4-6A	Bolt	S058982	ST345	16
004647	S096025	AN5-32A	Bolt	S015692	ST336	4
004647	F162429	D3500-1	Saddle		ST406	2
004647	F163822	D3500-1	Saddle		ST406	2
004647	S096024	D3501-1	Bushing	S072749	ST037	16
004647	S096022	MS21042L4	Nut	S089365	ST303	24
004647	S096021	MS21042L5	Nut	S058178	ST303	4
004647	S096019	NAS1149D0463J	Washer	S062379	ST263	32
004647	S096018	NAS1149D0563J	Washer	S068662	ST263	8

Note: Ad hoc query view of Part.dbo.Container where Container.Active = 1.

Plex 7/25/18 10:00 AM dart.quirion.sonia

Erasmus